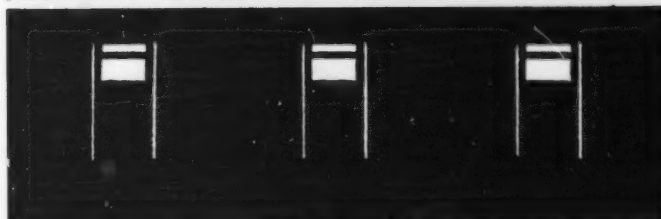




Energy
Ontario

Energy Conservation through Municipal Management

An Overview of Opportunities for
Small Municipalities



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Small Municipalities

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Hon. Vincent G. Kerrio, Minister
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Introduction



Since the early 1970's, when the energy crisis originated, the price of regular gasoline has increased from about 11.3¢/L (\$0.51/gal.) to 50.0¢/L (\$2.27/gal.) today.

This rise in the price of fuel has increased the costs associated with fleets owned and operated by all municipalities in Ontario, regardless of size.

In this environment, it is only logical to establish an energy management framework within which the smaller municipalities may initiate an energy conservation program, which goes beyond the building-oriented conservation measures, to tap the saving potential in their fleet operations.

The fleet energy-saving opportunities within each municipality may appear to be small, but when all of the saving opportunities are combined for the more than 500 small municipalities, significant province-wide results may be achieved. This booklet, while recognizing the uniqueness of these rural municipalities, has been developed to assist the towns, villages, townships and small districts in developing and implementing energy conservation projects.

This booklet outlines a procedure by which the small municipality may implement an energy conservation program which will reduce the oil-related fuel consumption of the municipal fleet. These fuel dollars saved may be kept in the local economy by either reducing the municipal budget or permitting the municipality to undertake additional work.

Management



Manager

The key to success in this program is the appointment of a manager. This person serves as a focus for the program and a contact point to whom the elected representatives and staff may bring questions and suggestions. The energy manager should have the ability to establish a realistic program with attainable goals and to motivate staff to assist in the program development, monitoring and evaluation.

For the success of this program, it is imperative that the energy manager have the support and co-operation of council and fellow employees, who together would:

- develop a municipal energy policy;
- determine the fleet energy conservation opportunities; and
- ascertain monitoring procedures.

Municipal Energy Policy

The first objective of the municipal energy manager would be to develop, with the assistance of council and fellow staff members, a municipal energy policy that would outline all of the realistic energy conservation opportunities in the municipality. Such a municipal energy policy should consider all energy conservation opportunities within the municipality; however, this booklet will outline only the opportunities associated with the municipal fleet operation.

This list of energy conservation opportunities should include, but not necessarily be limited to, the following:

- fleet energy-use reporting;
- dieselization;
- alternative fuels (propane, natural gas);
- vehicle sizing;
- vehicle specifications and options;
- vehicle maintenance;
- vehicle productivity;
- driver training;
- thermal integrity of fleet garages; and
- streetlighting.

Once the list of energy conservation opportunities has been prepared and ranking procedures developed, based on costs, savings, effectiveness, simplicity, etc., the next step is to define the recording procedures required to summarize the appropriate historical records and to develop recording procedures for future energy-use reporting.

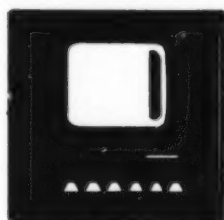
Recording Energy Conservation Data

Based on the adopted energy conservation program, the appropriate historical records should be summarized wherever possible to permit the analysis of the existing fleet operation by:

- fuel consumption;
- oil consumption;
- utilization;
- maintenance costs; and
- downtime.

After the program has been initiated, it is important to continuously monitor its progress and to quantify the benefits that have been achieved by the conservation actions implemented. These monitoring programs are essential to determine the effectiveness of the program procedures or whether alternative approaches and/or recording procedures are required. The results of the energy conservation program should be summarized on a regular basis and distributed to the municipal council and staff with appropriate recognition of individual efforts.

Document Municipal Energy Conservation Initiatives



The long term success of any energy conservation program depends not only on the co-operation and support of municipal council and staff, but on the dialogue between the municipalities that have undertaken similar programs. It is, therefore, beneficial to all participants not only to document the various conservation initiatives and findings of the programs undertaken, but also to communicate this information with other participating municipalities.

This exchange of data can be achieved on a one-to-one basis with neighbouring municipalities or by liaising directly with the Municipal Transportation Energy Advisory Committee (see below).

**MTEAC, Ministry of Transportation and Communications
1201 Wilson Avenue, Central Building, Room 324
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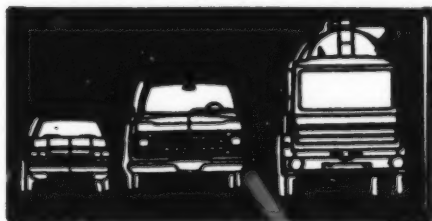
Summary Municipal Energy Conservation Process

The initiation of an energy conservation program for a small rural municipality may be summarized as follows:



This process may be used for a transportation energy program independently or combined with other in-house programs such as local government energy conservation program.

Conservation Opportunities



Efficiency of Existing Fleet

To determine the efficiency of the municipal fleet, it will be necessary to review existing recording procedures to

ascertain if they are adequate or require changes to permit the collection of pertinent data. This will allow the appropriate staff member to determine the following facts about the vehicle:

- initial cost;
- fuel consumption;
- oil consumption;
- utilization;
- maintenance costs; and
- out-of-service time.

In summary, with the collection and analysis of this data, the municipality can assess the performance of the existing fleet, and thus, the tentative replacement schedule. This information will also assist the municipality to determine the existing fleet equipment that should be considered for resizing at its replacement time; an oversized vehicle may be downsized or an overloaded vehicle may be replaced with a larger vehicle.

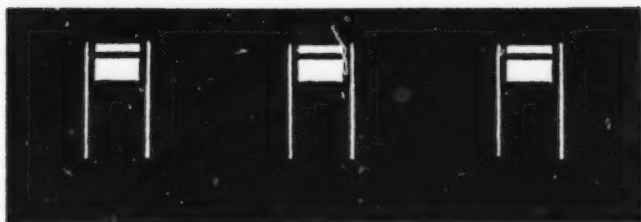
Mix of Existing Fleet

The mix of the existing fleet may be defined as the different types of vehicles that presently make up the municipal fleet, i.e., pickups, trucks, graders, tractors, etc. and the fuel being consumed by each.

When the various pieces of equipment are due for replacement, consideration should be given to proven equipment options and devices that would optimize the energy efficiency of the specific piece of equipment.

The following equipment options and devices may reduce the fuel consumption by 5 to 10%.

- radial tires;
- drag-reducing devices;
- thermostatically controlled radiator fans and shutters;
- transmission and axle ratios; and
- tag axles.



Alternative Fuels

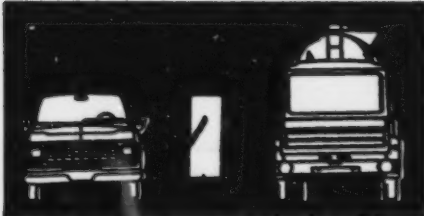
One popular way to reduce municipal fuel consumption in the heavier vehicles is to replace gasoline-engined with diesel-powered vehicles. This approach is popular because diesel engines are more fuel efficient and the price of diesel fuel is, on an average, 4 to 6% cheaper than unleaded gasoline.

Although the higher initial cost of acquiring diesel vehicles may offset some of the benefits, diesel engines tend to have longer operating lives and require less maintenance, thus generating further savings.

It should be emphasized that the major dollar benefit associated with the acquisition of diesel-powered equipment is for the heavier vehicles. The experience with diesel engines in lighter vehicles has not been as beneficial.

Of the other alternative fuels available, propane is currently the most viable with natural gas being a recent addition. Although both of these fuels require engine conversion kits and the installation of pressurized fuel tanks, the lower cost per litre of fuel-can result in a saving of 30 to 40% in annual fuel costs.

Review Procedures

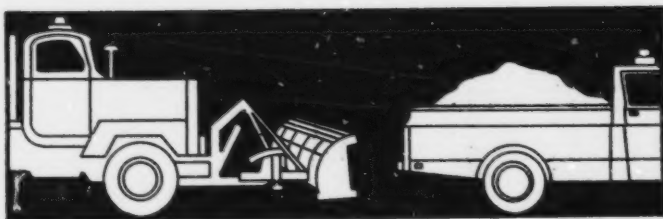


Review Existing Road Maintenance Policies

Keeping municipal roads clear and driveable through all seasons is a costly business, but any significant reduction in maintenance service could be a false economy since it may lead to greater fuel consumption and may create safety hazards. However, there are certain maintenance operations that should be reviewed to ensure that existing maintenance methods have not just evolved, but have been intentionally developed.

Some of the existing maintenance practices that should be reviewed are:

- roadside grass cutting and litter control;
- frequency of gravel road grading;
- frequency of and material used in hard top surface repairs;
- frequency and application rate of sand and salt (reduced application of sand would also save effort during the spring clean-up);
- depth of snow required to commence plowing; and
- energy-use reporting.

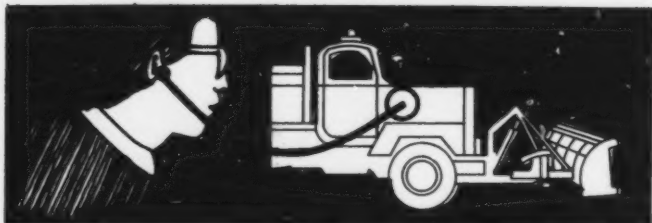


Determine Conservation Opportunities

Protecting the municipality's investment in its road system, maintaining high levels of roadway service and safety, as well as keeping costs down are all objectives of every municipality. It is therefore imperative that the municipalities be aware of what conservation opportunities are available in the areas of maintenance and fleet operations.

By documenting these opportunities, it would be possible for the energy manager and council to determine where their efforts can be channelled to maximize the energy savings.

Program Monitoring



Document Existing Fleet Fuel Expenditures

Once the decision has been made to proceed with an energy conservation program it is necessary to initiate a recording program which would document for each vehicle the historical and current fuel consumption per hour of operation and per kilometre travelled.

Document Fleet Fuel Saving Opportunities

Based on statistical data available from TEMP, the energy manager and municipal staff should determine the energy conservation opportunities available with the existing fleet and what additional opportunities would be available if the existing fleet mix was altered and/or converted to an alternative fuel.

Document Annual Fleet Fuel Savings

Once the transportation energy program is underway, it is important to keep track of its progress and add up the benefits that are being achieved.

Only through the quantifying of the implemented conservation measures will it be possible to determine if the program is working as planned or whether alternative approaches are required.

These results should be summarized monthly and presented to all participants to ensure their continuing support for existing and future programs.





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